भारतीय मानक
Indian Standard

IS 5815 (Part 2) : 2021

वस्त्रादि — मछली पकड़नें के गियर की सामग्री — परीक्षण विधि

भाग 2 रैखिक घनत्व (द्रव्यमान प्रति इकाई लम्बाई) का निर्धारण

(पहला पुनरीक्षण)

Textiles — Fishing Gear Materials — Methods of Test

Part 2 Determination of Linear Density (Mass per Unit Length)

(First Revision)

ICS 65.150

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Textile Materials for Marine/Fishing Purposes Sectional Committee, TXD 18

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by Textile Materials for Marine/Fishing Purposes Sectional Committee had been approved by the Textile Division Council.

This standard is one of the series of India standards on methods of test of fishing gear materials. This standard was first published in 1970. It has been revised to align it with latest trade practices.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

TEXTILES — FISHING GEAR MATERIALS — METHODS OF TEST

PART 2 DETERMINATION OF LINEAR DENSITY (MASS PER UNIT LENGTH)

(First Revision)

1 SCOPE

This standard prescribes the method of determination of linear density (mass per unit length) of netting yarns dry, wet and under water.

2 REFERENCES

The following standard contains provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of this standard:

IS No.	*Title*
6359 : 1971	Method for conditioning of textiles

3 PRINCIPLE

The linear density is calculated from the length and the mass of suitable specimens. The sample is first conditioned free from tension and length is measured under pre-tension. The specimens are then weighed in the required condition (dry, wet or immersed in water to calculate the mass in sea water).

4 ATMOSPHERIC CONDITIONS FOR TESTING

4.1 The tests shall be carried out in the standard atmosphere (*see* **4.2**).

4.2 Conditioning of Test Specimen

The test samples shall be conditioned to a state of moisture equilibrium from dry state in standard atmosphere at 65 ± 5 percent relative humidity and 27 ± 2 °C temperature (*see* also IS 6359).

4.2.1 When a test sample under zero tension has been left in such a way as to expose as far as possible, all portions of it to the standard atmosphere for 24 h, the test sample shall be deemed to have reached a state of equilibrium.

4.3 Testing in Wet State

The test specimens, after cutting to standard length under standard pre-tension (*see* **6.1** and **6.1.1**) shall be immersed in tap water at room temperature without wetting agent for a period not less than 12 h.

4.3.1 A shorter time of immersion (one hour) may be used with the addition of wetting agent.

5 APPARATUS

5.1 Pan Balance and Weights — Of sufficient capacity to weigh the specimen required for the purpose and capable of weighing the specimen to an accuracy of 10 mg.

5.2 Wrap Reel — Capable of winding exact lengths under required tensions.

5.2.1 In case of non-availability of wrap reels and in case twines are available in short lengths or for twines removed from nets, an alternate device capable of measuring the straightened lengths of twine shall be used. It shall be provided with two clamps, the distance between which shall be adjustable and through one of which a known tension could be applied. Each clamp shall consist of two jaws, preferably metallic, having parallel gripping surfaces. The gripping surfaces shall be in the same plane.

6 PREPARATION OF TEST SPECIMENS

6.1 From each conditioned sample, suitable lengths of twine shall be reeled off without alternation of twist keeping the standard pre-tension of tex/2 g so that the weight of each specimen is at least 5 g. The length of the specimen shall be determined to within 0.1 percent while under the specified pre-tension. The length of each test specimen shall be of 10 metres (for tex) and 9 metres (for denier) or its multiples.

6.1.1 In the case of short lengths, if an apparatus of the type described in **5.2.1** is used, as many straightened lengths under standard pre-tension of 0.45 ± 0.09 g/tex (or 0.05 ± 0.01 g/d) shall be measured and cut as will make up the desired total length and weight given in **6.1**.

7 PROCEDURE

7.1 Mass-Dry — Specimens prepared according to **6.1** or **6.1.1** shall be weighed correct to 1 mg.

7.2 Mass-Wet — Specimens prepared according to **6.1** or **6.1.1** and immersed in water in accordance with **4.3** shall be removed from water, allowed to drain and weighed.

7.3 Mass Under Water — Specimen weighed according to **7.1** is completely soaked in water for 12 h. It is then weighed, suspended in water at room temperature. For materials lighter than water, a sinker is used. The values shall then have a negative sign.

8 NUMBER OF TESTS

The results shall be based on the average of 10 tests.

9 CALCULATIONS

9.1 Calculate the linear density of each specimen by using the following formulae:

a) $\text{tex} = \frac{1000\,W}{L}$

b) $\text{Denier} = \frac{9000\,W}{L}$

where

W = weight of the specimen in g, and

L = length of specimen in metres.

9.2 The wet-weight is expressed as a percentage of dry-weight.

9.3 The weight of the specimen under water is expressed as a percentage of the weight of the air-dry weight.

9.4 Specific gravity $= \dfrac{0.998}{1-\left[\dfrac{\text{Weight in water}}{\text{Air dry weight}}\right]}$

9.5 Mass in sea water, percent =

$$100\times\left[1-\frac{\text{sp gr of sea water}}{\text{sp gr of material}}\right]$$

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Textile Materials for Marine/Fishing Purposes Sectional Committee, TXD 18

Organization	*Representative(s)*
ICAR-Central Institute of Fisheries Technology, Kochi	Shrimati (Dr) Saly N. Thomas (***Chairman***)
Association of Indian Fishery Industries, New Delhi	Shri T. Ragunath Reddy Dr C. Babu Rao (*Alternate*)
Centre for Marine Living Resources and Environment, Kochi	Dr Sherine Sonia Cubelio Dr Hashim (*Alternate*)
Central Institute of Fisheries, Nautical and Engg Training, Kochi	Shri M. G. Makwana
ICAR-Central Institute of Brackishwater Aquaculture, Chennai	Shri Jose Antony
ICAR-Central Institute of Fisheries Technology, Kochi	Shrimati (Dr) Saly N. Thomas Dr Sandhya K. M. (*Alternate*)
ICAR-Central Marine Fisheries Research Institute, Kochi	Dr Ratheesh
Fisheries Development Commissioner, New Delhi	Dr Paul Pandiyan Dr Sanjay Pandey (*Alternate*)
Fisheries Survey of India, Mumbai	Dr S. Ramachandran Shri A. E. Ayoob (*Alternate*)
Garware Technical Fibres Ltd, Pune	Shri Kishore J. Darda Shri Sachin P. Kulkarni (*Alternate*)
Indian Fishnet Manufacturers' Association, Chennai	Shri M. K. Unni Krishnan
National Institute of Ocean Technology, Chennai	Dr G. Dharani Dr N. V. Vinithkumar (*Alternate*)
Office of the Textile Commissioner, Mumbai	Shri Ajay Pandit Shri N. K. Singh (*Alternate*)
Reliance Industries Limited, Mumbai	Shri M. S. Verma Shri Keshav Pareek (*Alternate*)
SRFP Limited, Chennai	Shri N. Santhan Shri R. Raghvendra Sayee (*Alternate*)
The Synthetic and Art Silk Mills' Research Association, Mumbai	Shrimati Ashwini A. Sudam Shri Ravi Prakash Singh (*Alternate*)
The Karnataka Fisheries Development Corporation Ltd, Bangaluru	Managing Director
The Kerala State Cooperative Federation for Fisheries Development Ltd, Kochi	Shri P. Surendren
The Marine Products Export Development Authority, Kochi	Dr M. K. Rammohan Shri A. Sakthivel (*Alternate*)
BIS Directorate General	Shri A. K. Bera, Scientist 'F' and Head (TXD) [Representing Director General (*Ex-officio*)]

Member Secretary

Shri A. K. Bera
Scientist 'F' and Head (Textiles), BIS

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